

Presentation Title: Current WMA Permit Conditions  
Flow Levels/Habitat Categories in Permit Application Reviews

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Department of Environmental Protection

Date of Presentation: 22 March 2011

*The following presentation is offered for discussion purposes only and does not necessarily represent current statute, regulation, or policy positions of the Commonwealth of Massachusetts unless specifically acknowledged.*

*This presentation is not to be cited as a reference. It's purpose is to foster open and broad discussion of the issues as well as help assure public awareness of the discussions as of the date of the presentation.*

# STREAM FLOW CRITERIA AND PERMITTING SCENARIOS

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Sustainable Water Management Initiative  
Advisory Committee  
March 22, 2011

# SWMI Advisory Committee

## Disclaimer

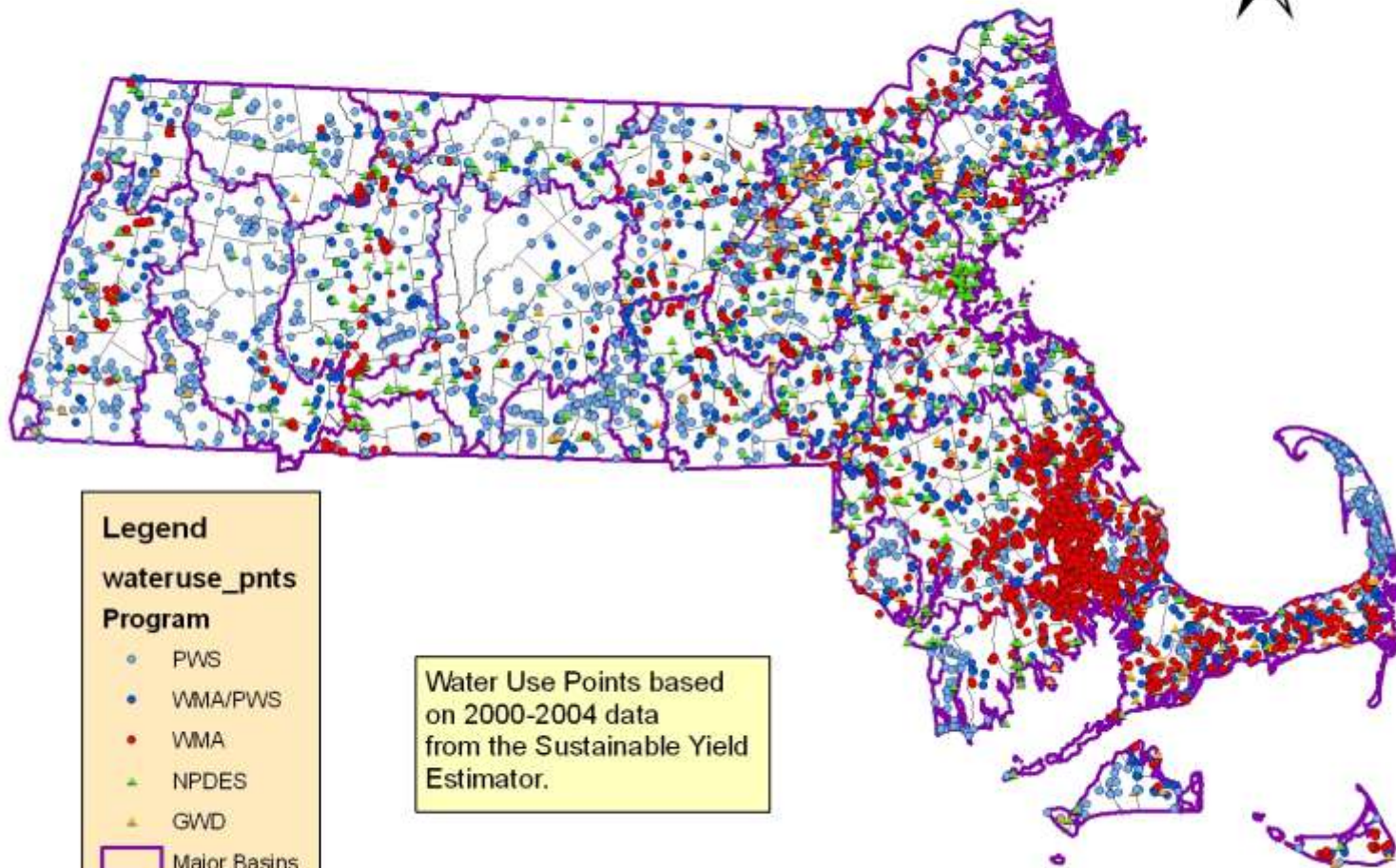
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# Agenda

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- Statewide overview
- WMA existing permit conditions
- Streamflow criteria
- WMA proposed Tier Permit Review
- Tier review scenarios (case example)
- Mitigation conditions
- Questions for consideration


## Water Use Points




February 23, 2011

# WMA Existing Permit Conditions


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1. Surface water and groundwater source protection
2. Firm yield analysis for PWS surface water impoundments
3. Wetlands and vernal pool monitoring
4. Performance standard: 65 residential gallons/capita/day  



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5. Performance standard: 10% unaccounted-for-water  


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6. Seasonal limits on nonessential outdoor water use
  - Calendar or stream flow trigger 

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7. Water conservation requirements
  - Water audits, leak detection, metering, pricing, residential and public sector including municipal buildings
8. Water withdrawal increases that exceed baseline
  - Offset Feasibility Study 

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## Performance Standard

### Residential Gallons Per Capita Day (RGPCD) Water Use

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- The performance standard for RGPCD is 65 gallons.
- 2 full calendar years to meet the standard.
- Choice to file an individual RGPCD Plan of their own creation, or may adopt the RGPCD Functional Equivalence Plan that includes MassDEP's Best Management Practices (BMPs)
- Permittee unable to meet 65 RGPCD within 5 years must implement MassDEP's Functional Equivalency Plan.

# MassDEP's RGPCD Functional Equivalence Plan Requires


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- Adoption of all three (3) items from the Individual Plan.
  1. a program that provides water saving devices at cost
  2. A program that provides incentives for the purchase of low flow water use appliances
  3. the adoption and enforcement of an ordinance to require the installation of climate-related control technology on all automatic irrigation systems
- Compliance with permit conditions including the Seasonal Limits on Nonessential Outdoor water use.
- Use of increasing block rates or a seasonal water rate structure.
- Implementation of monthly or quarterly billing




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## Performance Standard Unaccounted-For-Water (UAW)

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- The performance standard for UAW is 10% of overall withdrawal.
- 2 full calendar years to meet the standard.
- Choice to file an individual UAW Plan of their own creation, or may adopt the UAW Functional Equivalence Plan that includes MassDEP's Best Management Practices (BMPs)
- Permittee unable to meet 10% UAW within 5 years must implement MassDEP's Functional Equivalency Plan.


# UAW Functional Equivalence Plan BMPs

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- Analyze the failure to meet the performance standard.
- Develop a schedule of actions to meet the performance standard
- Annually describe the actions taken to address the failure to meet the performance standard.
- Complete a water audit and leak detection survey of the entire system within one year.
- Conduct sufficient repairs to reduce by 75% (volume) all leaks detected in the survey; then conduct additional repairs as necessary to reduce UAW to 10% or less.
- Implement a program for the inspection, evaluation, repair, replacement and calibration of all water meters.
- Implement monthly or quarterly billing.
- Implement a full cost water pricing structure.

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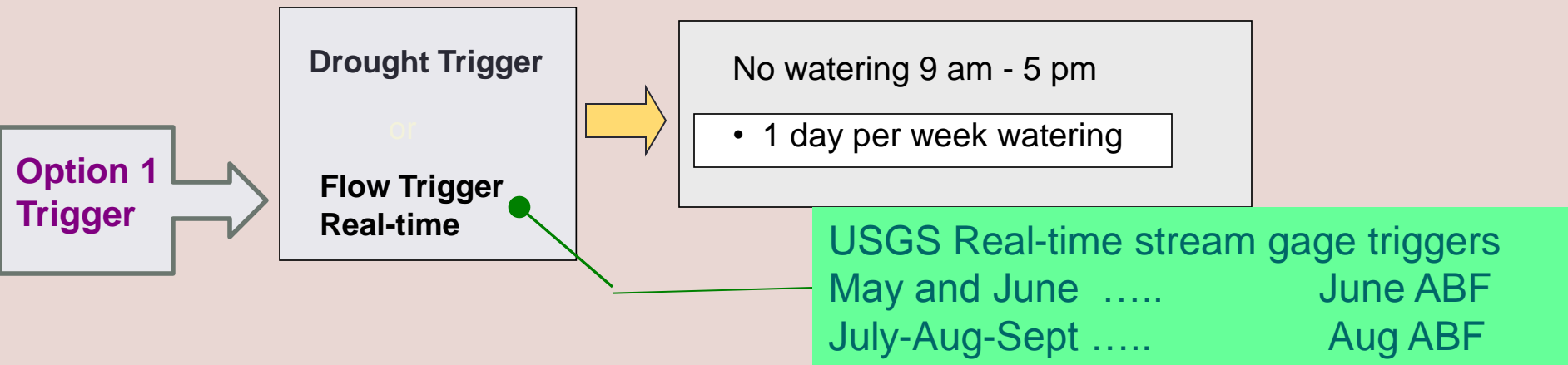
# Limits on Nonessential Outdoor Water Use

## Permit Requirement

### Water Use Restriction Allowance on Withdrawals

May thru September

> 65 rgpcd



- If below 65 RGPCD, permittee implements their own plan with DEP minimums of nonessential outdoor water use from 9 am to 5 pm.
- Exemptions may apply to communities with seasonal populations and/or water supply reservoirs.

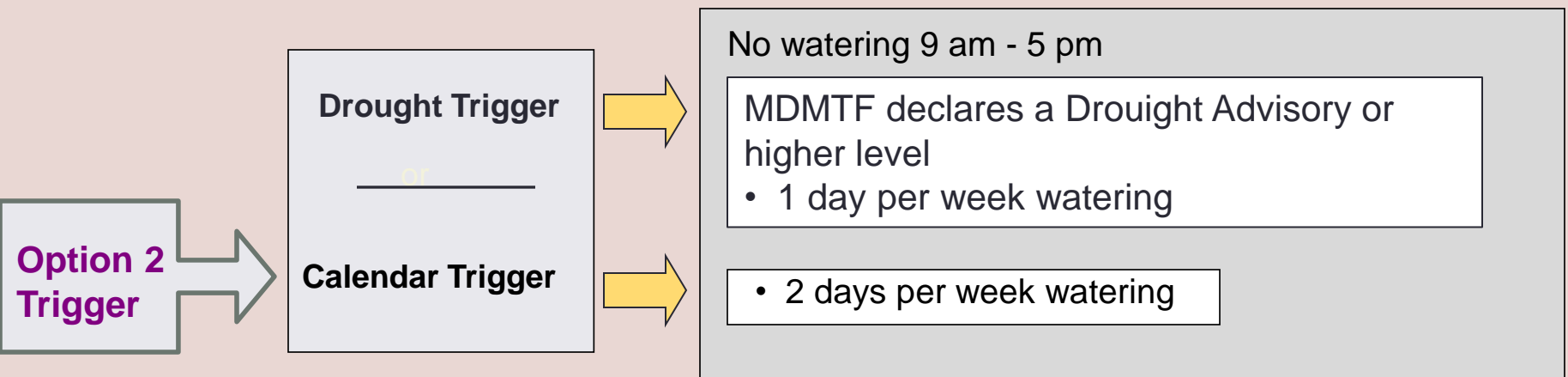
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# Baseline Water Use

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Whichever is greatest:

- 2005 water use
- 2003 – 2005 average water use, or
- registered withdrawal

- First year exceeding baseline, permittee must develop an Offset Feasibility Study and conduct an analysis of the cost effectiveness of mitigations
- Second year exceeding baseline, permittee must implement selected mitigations

# Stream Flow Criteria

| Fluvial Fish Relative Abundance |                           | % allowable alteration of estimated unimpacted median flow* |                                     |       |       |       |
|---------------------------------|---------------------------|---|-------------------------------------|-------|-------|-------|
| Biological Category (BC)        | August Percent Alteration | Flow Level (FL)   | AUG                                 | OCT   | JAN   | APR   |
| 1                               | < 5%                      | 1   | < 5%                                | < 5%  | < 5%  | < 5%  |
| 2                               | < 15%                     | 2   | < 15%                               | < 5%  | < 5%  | < 5%  |
| 3                               | < 35%                     | 3   | < 35%                               | < 15% | < 15% | < 15% |
| 4                               | < 65%                     | 4   | Feasible mitigation and improvement |       |       |       |
| 5                               | > 65%                     | 5   |                                     |       |       |       |

- Existing PWS with alteration levels higher than those shown on the chart will be required to maintain and where feasible improve their flow level.

- \*Surface water supplies will be evaluated through a separate metric.

FOR DISCUSSION PURPOSES ONLY – DO NOT CITE

# Tier Permit Review

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## Tier 1 Review

No increase requested, no increase above baseline

## Tier 2 Review

- Increase above baseline use or increase resulting in less than 5% additional alteration to estimated unaffected flow and would not change biological category or flow level

## Tier 3 Review

- Increase would alter estimated unaffected flow by more than 5% and/or would result in a change in biological category or flow level

# Tier 1 Review / Permit Conditions

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Scenario 1: No increase in withdrawal  
(no increase above baseline annual volume)

Existing permit conditions 1 thru 8 apply

In Flow Level 4 or 5, or  
in the presence of a coldwater fishery resource:

- Conduct a pumping optimization evaluation

# Tier 2 Review / Permit Conditions

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## Scenario 2: Withdrawal increase ...

- less than 5% simulated unaffected flow  
and
- maintains BC/FL stream category flow threshold

- Permit conditions 1 thru 8 apply
- In a **coldwater fishery resource**\*, consultation with DEP/other agencies required to scope potential mitigations measures for evaluation\*\*
- Conduct and submit an Offset/Mitigation Study
- Permittee may get credit for mitigation already implemented
- Mitigation requirements subject to DEP annual review

\*Consultation may also be required in **Flow Level 4 & 5**

\*\*Potential mitigations based on DEP's offset feasibility guidance, NEWWA & MWWA Toolbox

# Tier 3 Review / Permit Conditions

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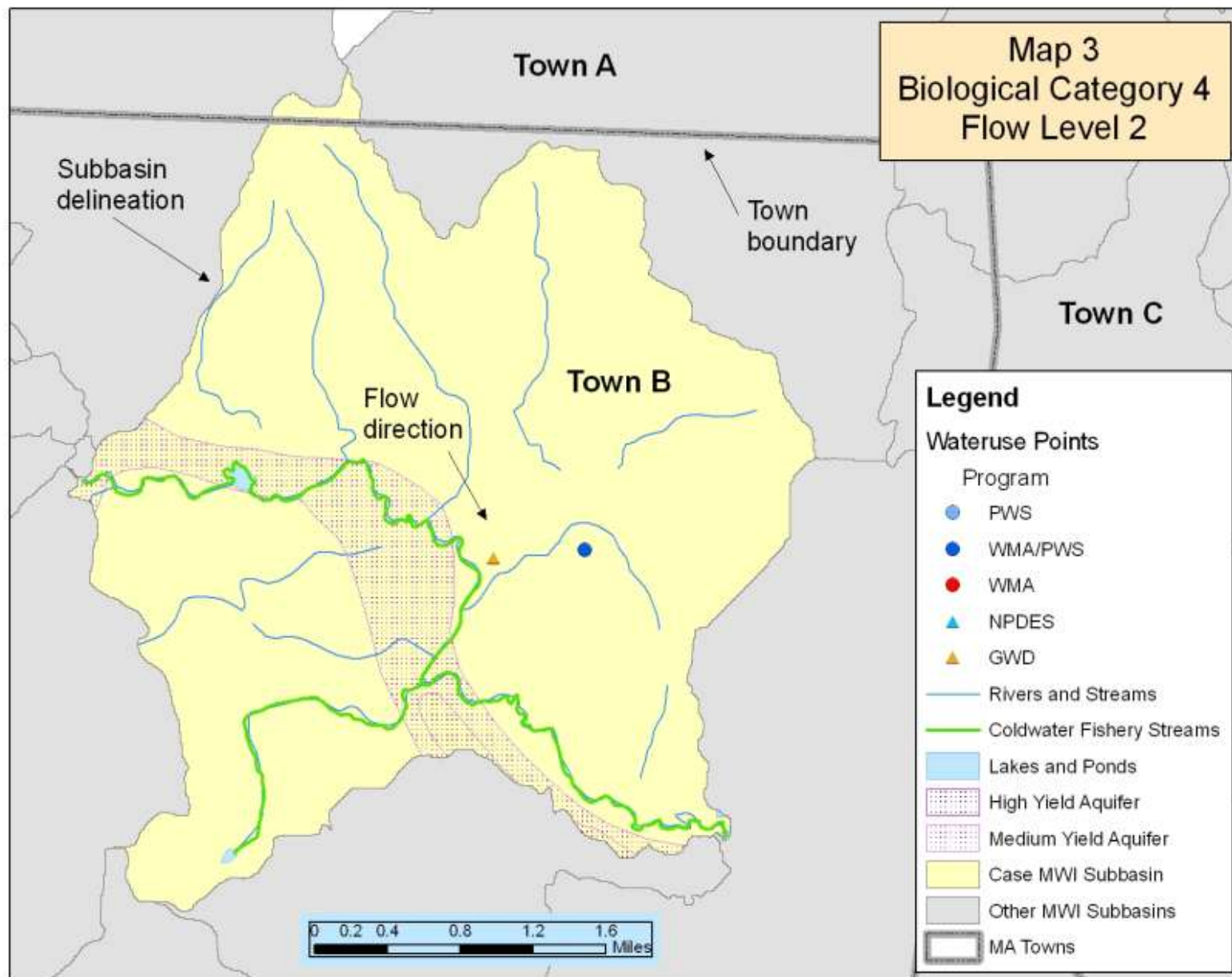
## Scenario 3: Withdrawal increase ...

- exceeds 5% simulated unaffected flow threshold  
or
- exceeds BC/FL stream category flow threshold

A water withdrawal increase may be allowed for Water Management Act considerations provided that certain conditions are met\*

\*Conditions such as:  
- No alternative  
- Water Needs Forecast  
- WRC Water Conservation Standards

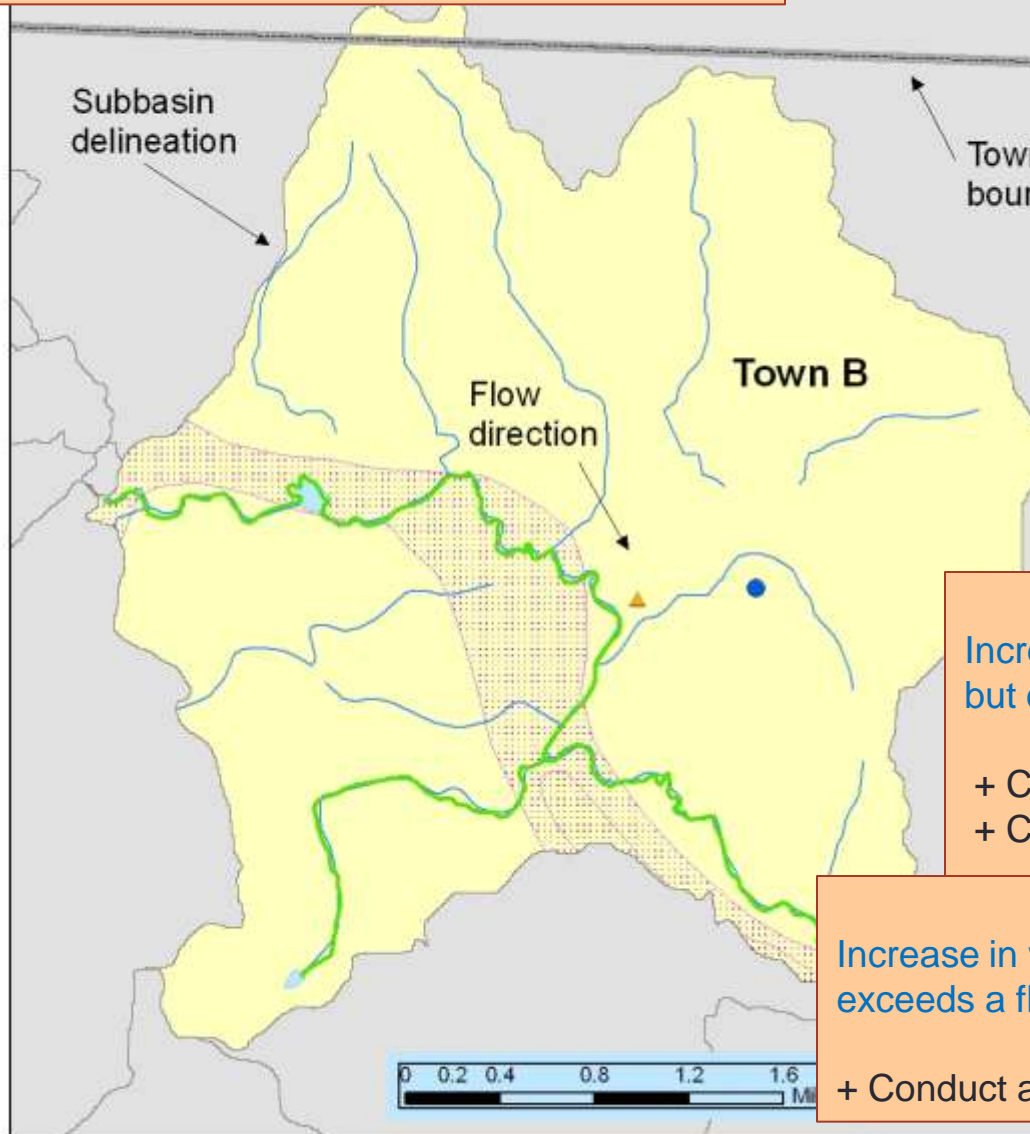
- Conduct and submit an Alternative Analysis
- Permit conditions 1 thru 8 apply
- Consultation with DEP/other agencies required to scope potential mitigation measures for evaluation
- Conduct and submit an Offset/Mitigation Study
- Permittee may get credit for mitigation already implemented
- Mitigation requirements subject to DEP annual review



### Tier 1

#### No increase in withdrawal

- Permit conditions 1 – 8
- Conduct a pumping optimization evaluation



### Case Example

BC/FL: 4/2

Local Drainage area: 11.09 sq.mi.

Nested Drainage area: 53.32 sq.mi.

Local Impervious cover: 6.05%

Nested Impervious cover: 4.79%

Estimated August percent alteration: -5.73%

**Coldwater Fishery Resource present**

#### Flow thresholds:

- 0.47 mgd remaining in BC/FL category
- 0.44 mgd within 5% unaffected August median flow

### Tier 2

Increase in withdrawal is above baseline but does not exceed either flow threshold

- + Consult with DEP/other agencies
- + Conduct an Offset Feasibility Study

### Tier 3

Increase in withdrawal is above baseline and exceeds a flow threshold

- + Conduct an Alternative Analysis



# Mitigation Conditions by Categories

## Water Supply Related

- Adopt more strict nonessential, outdoor water use restrictions (e.g., Seasonal cap, Ipswich Basin restrictions, etc.)
- Private well bylaw
- Irrigation sprinkler regulation
- Conservation rate structure
- Enterprise account
- Water banking
- Stretch code water efficiency (e.g., 60 rgpcd)
- Other

## Physical Habitat of Stream

- Streambank restoration
- Increase fish passage
- Culvert replacement
- Stream buffers
- Dam removal
- Instream habitat work
- Install and monitor a staff gage
- Support a USGS stream gage
- Land acquisition / CR
- Other

Other entities involved

## Water Quality / Municipality

- Stormwater bylaw
- Stormwater utility district
- Mitigation fund
- Land acquisition / CR
- Land use protections
- Reduce I/I
- Wastewater reuse/return
- Other

## Questions for Consideration:

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### 1. Feasible Mitigation and Improvement for Flow Levels 4 and 5:

- a) How can we define “feasible mitigation and improvement”?
- b) For Tier 1 (no increase in withdrawal), how do the WMA permit requirements and NPDES MS4 requirements in municipalities help to satisfy the goal of feasible mitigation and improvement?

## Questions for Consideration:

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### 2. Offsets and Mitigation:

- a) What are your thoughts on the desktop pumping optimization evaluation (Tier 1) requirement?
- b) What should be the goal of offsets and mitigation (Tier 2 and Tier 3)?
- c) How can we make mitigation more measureable and commensurate to impact (i.e., rank by location, level of impact, etc)?